MEMORANDUM

TO: Marine Fisheries Advisory Commission

FROM: Paul Diodati, Director

DATE: November 10, 2003

SUBJECT: Recommendation on an Outer Cape Cod Effort Management Control Plan

Synopsis: The Atlantic States Marine Fisheries Commission (ASMFC) Interstate Lobster Plan requires DMF to pass an effort control plan for the Outer Cape Cod Lobster Management Area. In this memo I provide background information, my final proposal, and rationale for the proposal. The plan is a derivation of previous strategies and would allocate a unique number of traps to each eligible fisherman based on each fisherman's annual maximum fishery performance (in lbs.) over a three year period (2000-2002) using DMF's established relationship between landings and traps. We have had numerous public meetings and have held two public hearings. Now it's time to implement the new regulations.

Background: To meet the compliance criteria of the interstate Lobster Plan, DMF must enact an effort control plan that would reduce 1998 trap levels 20% by 2008. The last major stock assessment was conducted in 1998. The Outer Cape Cod Lobster Conservation Management Team (OCC LCMT) comprised of local commercial lobstermen devised this conservation strategy in 2001 with assistance from DMF staff. Other conservation measures chosen by OCC LCMT to reach the so-called F_{10} goal of the plan included four incremental lobster minimum size increases to 3 3/8", an increase in trap escape vent size to 5 ¾" (rectangular) or 2 ½" (two circular), and a three month closed season from January 1 through March 31. The plan was approved by the ASMFC as part of Addendum III on November 20, 2001 and was taken to public hearing by DMF on March 25-26, 2002.

You may recall that when we debated the merits of the plan at the April 4, 2002 MFC business meeting, some Commission members expressed strong reservations because it was creating a precedent where a sub-population of Massachusetts Coastal Lobster permit holders would be given exclusive rights to fish this area while all other permit holders would be excluded. My concerns were even broader: I felt that if limiting fishing effort and addressing "latent effort" based on permit history was sensible, then it should be done state-wide. To that end I recommended the status quo for the OCC lobster fishery until DMF could craft a state-wide proposal.

DMF proposed an elaborate state-wide lobster effort control plan that was aired at public meetings in May of 2003, but the plan was opposed by many permit holders. The state-wide plan attempted to broaden the eligibility criteria beyond those in the OCC plan. The OCC plan allocated future traps for Outer Cape lobstermen based on only the number reported fished in year 2000, with appeals for certain fishermen joining the fishery in 2001.

The state-wide plan also tried to address "effective effort" by limiting transferable traps to a number of traps that is reflective of the pounds actually reported landed. This was necessary to prevent fishermen who over-reported traps from being rewarded, and it also served to further reduce latent effort by constraining the transformation of lightly fished (inefficient) trap numbers from becoming more efficient units of fishing effort. In the end, this plan attempts to control fishing mortality, and we hope that effort controls will contribute to this goal.

Despite the opposition to a comprehensive state-wide effort control plan, it appears effort control in most areas is already on our doorstep. In addition to the Outer Cape Cod plan, Area 3 (offshore) already has a history-based plan that is being overseen by NOAA Fisheries, and Area 2 (southern New England including RI) has a few history-based effort control proposals that are part of Addendum IV (ASMFC is currently conducting public hearings on Addendum IV).

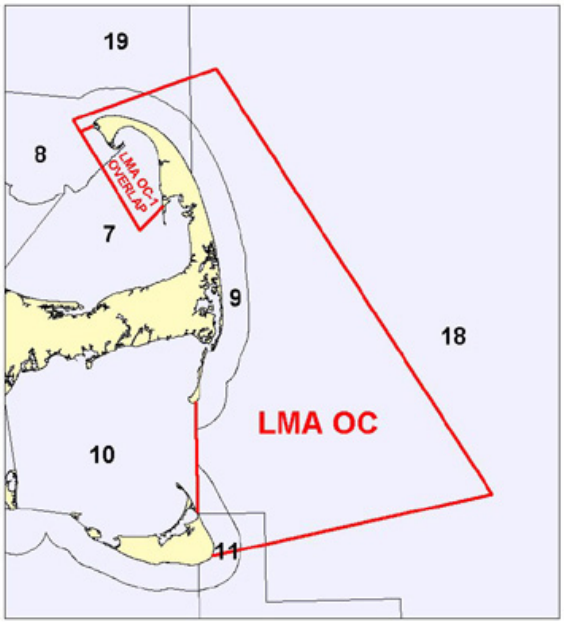

Figure 1. Boundaries of Outer Cape Lobster Conservation Management Area (LMA OC).

Only Area 1 has no such aspect to its conservation measures. However, if mortality continues to rise in Area 1, as it appears to be, stronger conservation measures will be needed. In light of the latent effort in the state and federal lobster fisheries, I suspect an Area 1 effort control plan may be sought if the next stock assessment results warrant substantial increases in conservation and reductions in catch. Recent experience has shown that industry-initiated effort control plans rarely leave the door open for new entrants.

Conceding we are unable to immediately accomplish state-wide and/or region-wide effort control measures, we must adopt an Outer Cape Cod-only effort control plan for 2004 and beyond to be in compliance with the Interstate Plan. We are already two years late on this measure, as the plan drafted by the OCC LCMT was designed to be implemented for the 2002 fishing season. Admittedly, much of the fault with the delay lies with DMF since we have spent the past two years attempting to first replace this plan with a state-wide version strong on conservation and then with an improved version that addresses some apparent inequities.

The OCC is a discrete area, representing less than 10% of the state's lobster fishery. A trap reduction there requires us to constrain participation as substantial increases could occur if (1) active fishermen shifted their operations into the area; (2) un-fished permits are activated and begin fishing in the area; or (3) collectively the current participants increase their traps.

The ASMFC-approved OCC Plan froze effort based traps reported fished there in the year 2000. I continue to object to the following aspects of the plan:

- A single year determines eligibility to continue fishing in the area determines trap allocation;
- Appeal process for fishermen who joined the fishery in 2001 is inadequately defined;
- Control on "effective effort" is not addressed; e.g. in some cases large trap numbers are allocated to fishermen despite their very low performance (landings); and
- Lobstermen who may have over-reported their trap numbers are rewarded (potentially).

In addition to the original OCC LCMT plan, DMF presented an alternative at a September 24, 2003 public hearing (see public hearing notice) that was a remnant of the state-wide plan. The alternative addressed many of my objections to certain features of the OCC LCMT Plan.

The alternative proposal calculated:

1. Initial Trap Allocations. Number of traps based on a 5-year average of traps reported;
2. Transferable Traps. Number of traps that could be transferred based on calculated relationship between 5-year average landings to average number of pots;
3. Fishable traps. The higher of the two aforementioned values (Initial Trap Allocation vs. Transferable Traps) until a fisherman transfers some of his traps. At transfer, the number becomes the lower of the two.

DMF's alternative plan was complex and gained little support Nevertheless, it was clear that eligibility aspects of the two alternative plans were the focus of public hearing discussions. For both plans, fishermen must have been active in the OCLMA fishery fishing traps during Jan 1999 - December 2000. Predictably, support for the original OCC plan came from fishermen who contributed to the drafting of the plan, presumably because their individual allocation (based on year 2000 traps fished) was acceptable to them. However, many lobstermen criticized the plan either because they scaled up their fishing since 2000 or they had future plans to enter the fishery.

It should be noted that neither the original plan nor the alternative aired at the hearing accommodated lobstermen who began fishing after 2001 – specifically, in 2002 or in the current fishing year, 2003.

While I credit the Outer Cape Cod LCMT for their progressive stance on effort controls, I remain gravely concerned about impacts of this plan on certain individuals. Impacted permit holders attended the hearing and expressed dismay that their current operations would be curtailed or eliminated by the proposed rules, notably the requirement to have been active in the fishery during 1999-2000. I have asked staff to analyze various scenarios that would accomplish conservation goals while accommodating some recent entrants into the fishery, to the extent practicable. I have asked if relaxing participation criteria to allow fishermen who have joined the fishery since 2000 would prevent the goals from being met.

Determination of 1998 starting level to meet plan goal of 20% reduction: To meet the targets, the plan must reduce traps by 20% from the 1998 level. So the first question is how many traps were fished in 1998 in Outer Cape Cod? There are several challenges to overcome in order to answer this question, as our statistical reporting system does not coincide with the

LMA's (see Figure 1), and some fishermen set traps in Outer Cape Cod only on a seasonal basis. Others fished in the area in 1998, but have since departed the fishery or opted for a different LMA. The participation level in 1998 is the key parameter to determine program success.

Criteria used to estimate trap count in 1998 in Outer Cape Cod: For simplicity's sake, only statistical reporting areas 8, 9, 11, and 18 were considered to be part of the OCC LMA. However, as the majority of statistical reporting areas 8 and 18 lie outside the OCC LMA, an area percentage was applied to effort data from those statistical reporting areas (19% of area 8 and 21% of area 18 lie within the LMA OC). An individual's maximum pots fished in Outer Cape Cod in 1998 were determined as follows:

1. For each month, sum the maximum pots fished in areas 8, 9, 11, and 18 (with area % applied, if 8 or 18);
2. Find the maximum monthly value from step 1.

The maximum pots fished in LMA OC were summed across all lobstermen to determine a total effort value for 1998. Consequently, **the total number of traps fished in Outer Cape Cod was estimated to be 33,057 traps by 99 fishermen. Reducing this total by 20% by 2008 means our target is 26,446 traps** (see Table 1)**.**

Table 1. Summary Statistics for Outer Cape Cod Lobster Trap Fishing

Year	Fishermen	Maximum Traps Fished
1998	94	33,057
2000	77	29,058
2001	73	30,768
2002	76	33,546
2000-2002	99	41,011*
(All years combined)		
New DMF proposal	**99**	**30,415**
2008 (20% reduction from 1998 baseline)	**?**	**26,446**
		* 2000-2002 value of 41,011 is the total if the highest value of the 3-yr period is granted.

Trap Reduction Tools: We must first cap the number of traps currently fished and then reduce that number through a variety of means. Trap reductions can be accomplished through the following:

- LMA-specific licensing rules Migrations of fishermen into this area should be restricted. DMF should prevent fishermen from adding additional effort (traps) into the area if those fishermen have no history in the area;
- License-specific trap limit Prevent fishermen from scaling up their trap numbers in the area. The OCC plan and DMF plan both have proposed history-based allocation schemes to grant each permit holder a unique number of traps based on fishing history during a prescribed period;

- Attrition Data showing the declining number of fishermen from 1998 to 2000 in Outer Cape Cod suggest there was a reduction in the number of fishermen in the area but that has since leveled off;
- Migration of trap fishermen out of Outer Cape Cod to Areas 1,2, and 3 Expectations of a license–specific trap limit in Outer Cape Cod as well as the larger minimum lobster size have already discouraged some from maintaining their operation in the area, especially if they would be eligible to fish a larger number of traps in the other LMA's;
- Active Reductions DMF could reduce trap numbers by lowering each permit holder's trap allocation by a percentage, or by lowering the maximum trap limit (currently at 800) to a lower value; and
- Passive reductions As proposed in the public hearing, upon transfer of traps between fishermen DMF could retain a percentage of the traps. Simply put: if a fisherman seeks to transfer the authorization for 100 of his traps, a 10% conservation tax would result in the recipient only receiving authorization to fish 90 of those traps.

Determination of Eligibility for Outer Cape Cod Trap Allocation. Similar to the proposals aired at public hearings, the following criteria were used to identify lobstermen eligible for an Outer Cape Cod trap allocation:

1. They indicated LMA OC on their license applications in 2003;
2. They reported landings in at least one of the OC statistical areas (8,9,10,11,18) in 1999, 2000, or 2001;
3. They reported fishing traps in at least one of the OC statistical areas (8,9,10, 11,18) in 1999, 2000 or 2001; and
4. Their homeport was in or adjacent to the OCCLMA.

Ninety-nine lobstermen were identified using these criteria. Not all lobstermen fished in each year. Only 76 lobstermen appeared to be fishing in OCC in 2002 (see Table 1).

Recommendation: Despite the lack of support for the alternative plan and the indications that many Outer Cape Cod fishermen still support the plan as originally crafted, I recommend against adopting the OCC LCMT plan as written. Instead, adopt an alternative that will result in trap allocations similar to those in the OCC plan, but treats all entrants who joined the fishery in 2001 fairly.

I recommend we enact a plan that allocates traps based on poundage to lobstermen who are eligible for Outer Cape Cod. The maximum annual poundage reported during years 2000, 2001, or 2002 would be used as a measure to allocate traps based on the traps fished-pounds landed relationship as seen in Appendix 1. However, in no case will the number of traps allocated be allowed to exceed the number of traps reported fished.

An individual's trap allocation was determined as follows:

1. "Effective traps fished" for each fisherman was calculated for 2000, 2001 and 2002. Their reported landings were used in a mathematical relationship (specific to OCC fishing performance) to determine an individual's annual trap use (Appendix Table 1);
2. If an individual's "effective traps fished" was higher than what they actually reported fishing in that year, they were given their reported value; and

3. To avoid the "single-year" effect on trap allocation, the maximum "effective" traps for the 3 years was used.

If each eligible fisherman accepts the trap allocation and continues to fish in Outer Cape Cod, we can expect a total of 30,415 traps allocated. This is an 8% reduction in traps from the 1998 trap level of 33,057 traps (Table 1). The reduction from the 1998 level would be greater if some Outer Cape Cod fisherman who refuse their trap allocation and leave the OCC area (perhaps to fish up to 800 traps in Area 1).

If additional reductions are needed to meet the overall 20% reduction by 2008 we can rely on passive and active reductions. The two plans aired at public hearing called for a trap transfer tax of 10%. We could increase this "tax" to a higher value (e.g. 20%) if necessary. Active reductions could include reducing each permit holder's trap allocation by a percentage or reducing the trap limit per permit holder from the current 800 traps to a lower value: e.g. 650 traps.

Table 2. Frequency of trap allocations within 50 pot intervals resulting from DMF proposed plan.

Trap Allocation Interval	Count of Permit Holders
0-49	15
50-99	18
100-149	6
150-199	9
200-249	5
250-299	1
300-349	4
350-399	4
400-449	2
450-499	7
500-549	4
550-599	6
600-649	7
650-699	0
700-749	2
750-799	0
800	9
Total	**99**

Rationale: This plan should be adopted for the following reasons:

1. It accomplishes similar goals as the original Outer Cape Cod plan yet provides additional access to fishermen who are current participants in the fishery. It maximizes the number of potential pots (and thereby obviates the need for an appeal process) by allowing a fisherman to use his best year during 2000-2002 for fishery performance;
2. By using an allocation-based scheme based on landed lobsters instead of reported traps fished, the system is more accountable. Pounds reported landed is a much closer measure of fishing mortality than is traps; and

3. In no instance does anyone get more traps than they reported fishing in a given year. This allocation scheme satisfies the vast majority of fishermen who actively fish their traps and do not under-report their catch.

Treatment of SCUBA Divers: Public hearing comments from commercial SCUBA divers present an interesting challenge to us in this allocation scheme. We have a handful of commercial lobstermen who harvest by hand using SCUBA and many of these fishermen also report fishing a nominal number of traps. There are two dilemmas:

1. **Despite the ecological benefits of this method, we should be careful to prevent a proliferation of commercial harvesting.** We need to anticipate that some fishermen who do not get an adequate trap allocation may consider diving for lobster. This would compromise the conservation benefits of controlling traps as a means to reduce fishing mortality. To address this we should "grandfather in" the existing divers and not allow more into the OCC fishery.
2. **Certain SCUBA divers active in the Outer Cape Cod fishery seek a future trap allocation when, for physical or health reasons, they no longer are able to dive.** I recommend we accommodate this request by setting their future trap allocation as a function of their highest landings level in the same period being considered for trap fishermen. Once they receive a trap allocation they would be prohibited from diving for lobsters commercially in the OCC.

Appendix 1. LCM Area Outer Cape Cod specific trap allocations based on individual fishermen's unique level of average landings. ***Find your average annual landings for the years 1997- to see your predicted trap value.***

Average Pounds	Traps Allocated	Average Pounds	Traps Allocated	Average Pounds	Traps Allocated	Average Pounds	Traps Allocated
0	0	6,100	322	12,200	554	18,300	760
100	13	6,200	327	12,300	558	18,400	763
200	22	6,300	331	12,400	561	18,500	767
300	31	6,400	335	12,500	565	18,600	770
400	38	6,500	339	12,600	568	18,700	773
500	46	6,600	343	12,700	572	18,800	776
600	53	6,700	347	12,800	575	18,900	780
700	60	6,800	351	12,900	579	19,000	783
800	66	6,900	355	13,000	582	19,100	786
900	72	7,000	359	13,100	586	19,200	789
1,000	79	7,100	363	13,200	589	19,300	792
1,100	85	7,200	367	13,300	593	19,400	796
1,200	91	7,300	371	13,400	596	19,500	799
1,300	96	7,400	375	13,500	600	>19,537	800
1,400	102	7,500	379	13,600	603		
1,500	108	7,600	383	13,700	606		
1,600	113	7,700	387	13,800	610		
1,700	119	7,800	391	13,900	613		
1,800	124	7,900	395	14,000	617		
1,900	130	8,000	399	14,100	620		
2,000	135	8,100	402	14,200	624		
2,100	140	8,200	406	14,300	627		
2,200	145	8,300	410	14,400	630		
2,300	151	8,400	414	14,500	634		
2,400	156	8,500	418	14,600	637		
2,500	161	8,600	422	14,700	641		
2,600	166	8,700	425	14,800	644		
2,700	171	8,800	429	14,900	648		
2,800	176	8,900	433	15,000	651		
2,900	180	9,000	437	15,100	654		
3,000	185	9,100	441	15,200	658		
3,100	190	9,200	444	15,300	661		
3,200	195	9,300	448	15,400	664		
3,300	200	9,400	452	15,500	668		
3,400	204	9,500	456	15,600	671		
3,500	209	9,600	459	15,700	674		
3,600	214	9,700	463	15,800	678		
3,700	218	9,800	467	15,900	681		
3,800	223	9,900	471	16,000	685		
3,900	227	10,000	474	16,100	688		
4,000	232	10,100	478	16,200	691		
4,100	237	10,200	482	16,300	695		
4,200	241	10,300	485	16,400	698		
4,300	245	10,400	489	16,500	701		
4,400	250	10,500	493	16,600	704		
4,500	254	10,600	496	16,700	708		
4,600	259	10,700	500	16,800	711		
4,700	263	10,800	504	16,900	714		
4,800	267	10,900	507	17,000	718		
4,900	272	11,000	511	17,100	721		
5,000	276	11,100	515	17,200	724		
5,100	280	11,200	518	17,300	728		
5,200	285	11,300	522	17,400	731		
5,300	289	11,400	525	17,500	734		
5,400	293	11,500	529	17,600	737		
5,500	297	11,600	533	17,700	741		
5,600	302	11,700	536	17,800	744		
5,700	306	11,800	540	17,900	747		
5,800	310	11,900	543	18,000	750		
5,900	314	12,000	547	18,100	754		
6,000	318	12,100	550	18,200	757		